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Spectral order on AW*-algebras and its preservers

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Abstract

© 2016, Pleiades Publishing, Ltd.We study the spectral order on the set of positive contractions in an AW*-algebra. We introduce the concept of lattice theoretic center of the resulting spectral lattice and show that it coincides with the algebraic center of the underlying AW*-algebra A if A is finite. By applying this result we generalize hitherto known characterizations of preserves of the spectral order by showing that any bijection φ acting on the spectral lattice of a finite AW*-algebra that preserves spectral order and orthogonality in both directions is a composition of function calculus and a Jordan *-isomorphism. We show that this result holds in a wide context of all AW*-algebras provided that φ preserves in addition the multiples of unity.

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Keywords

AW*-algebras, preservers, Spectral order